

REMARKS

Claims 1, 2, 4-16 and 18-27 are pending in the application. Claims 6-12 and 20-27 are withdrawn from consideration as being directed to a non-elected invention. In the Office Action of May 29, 2003, the Examiner made the following disposition:

- A.) Objected to Figure 8.
- B.) Rejected claims 1, 2, 4, 5, 13-16 and 18-19 under 35 U.S.C. §102(b) as being anticipated by *Toshiyuki*.

Applicants respectfully traverse the rejection and address the Examiner's disposition as follows:

A.) Objection to Figure 8:

As per the Examiner's request a replacement drawing sheet including Figure 8 is submitted herewith. Figure 8 is amended to change the term "heterojunction" to "heterojunction".

Applicants respectfully submit the objection has been overcome and request that it be withdrawn.

B.) Rejection of claims 1, 2, 4, 5, 13-16 and 18-19 under 35 U.S.C. §102(b) as being anticipated by *Toshiyuki*:

Applicants respectfully disagree with the rejection.

Applicants' independent claims 1 and 13 each claim an insulating nitride layer formed as a buffer layer from a group III-V nitride compound semiconductor heavily doped mostly with cadmium.

This is clearly unlike *Toshiyuki*, which fails to disclose or even suggest a buffer layer that is heavily doped mostly with cadmium. To begin with, *Toshiyuki's* cadmium doped layer is a cladding layer, not a buffer layer. As clearly described in *Toshiyuki*, *Toshiyuki* attempts to improve crystallinity and suppress cracks in a buffer layer by providing an n-type cladding layer adjacent the buffer layer. (Para. 0011, abstract, claim 1). The cladding layer has a first impurity of at least one of C, Si, Ge, O, or Mg; and a second impurity of at least one of Ca, Zn, Cd, Hg, S, or Se. *Toshiyuki* fails to teach that its buffer layer can be doped with cadmium. Since, *Toshiyuki* fails to disclose or suggest a buffer layer that is heavily doped mostly with cadmium, *Toshiyuki* fails to disclose or even suggest Applicants' claims 1 and 13.

Further, *Toshiyuki's* cladding layer is not heavily doped *mostly* with cadmium. As described in *Toshiyuki*, *Toshiyuki's* first impurity has a concentration of $1 \times 10^{17} \text{cm}^{-3}$ to $2 \times 10^{19} \text{cm}^{-3}$, and preferably $1 \times 10^{15} \text{cm}^{-3}$ to $2 \times 10^{17} \text{cm}^{-3}$. (Para. 0012). *Toshiyuki's* second impurity of cadmium has a concentration of $2 \times 10^{15} \text{cm}^{-3}$ to $2 \times 10^{17} \text{cm}^{-3}$. (Para. 0022). Thus, *Toshiyuki's* second impurity of cadmium has a concentration that is less than or equal to *Toshiyuki's* first impurity. Accordingly, *Toshiyuki's* cladding layer is not heavily doped *mostly* with cadmium. Its cladding layer is merely doped with cadmium in a concentration equal to or less than a concentration of its first impurity. Therefore, *Toshiyuki* fails to even suggest doping a layer mostly with cadmium, let alone a buffer layer.

Accordingly, *Toshiyuki* fails to disclose or suggest Applicants' claims 1 and 13.

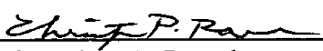
Claims 2, 4, 5, 14-16, 18, and 19 depend directly or indirectly from claims 1 or 13 and are therefore allowable for at least the same reasons that claims 1 and 13 are allowable.

Applicants respectfully submit that the rejection has been overcome and request that it be withdrawn.

CONCLUSION

In view of the foregoing, it is submitted that claims 1, 2, 4, 5, 13-16, 18 and 19 are patentable. It is therefore submitted that the application is in condition for allowance. Notice to that effect is respectfully requested.

Respectfully submitted,

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